Ali Kuwajerwala

M.Sc. Candidate, Mila & University of Montréal

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Actively seeking internship/full-time opportunities starting summer 2023 or later.

Publications

arXiv 2023 Jatavallabhula, K. M., **Kuwajerwala, A.**, Gu, Q., Omama, M., Chen, T., Li, S., Iyer, G., Saryazdi, S., Keetha, N., Tewari, A., Tenenbaum, J. B., Melo, C. M., Krishna, M., Paull, L., Shkurti, F., Torralba, A., *ConceptFusion: Open-set Multimodal 3D Mapping.* URL: https://concept-fusion.github.io.

ICRA 2022 Sharma, D., **Kuwajerwala, A.**, Shkurti, F., "Augmenting Imitation Experience via Equivariant Representations". In: *International Conference on Robotics and Automation (ICRA).* URL: https://arxiv.org/abs/2110.07668.

Experience

Applied Scientist Intern, Amazon Summer 2022
Alexa AI Team, Amazon Devices *(Toronto, ON)*
- Improved the accuracy of the conversational **NL2SQL** system by **1.5%** on the **Spider** NL2SQL dataset.
- Prototyped alternative model architectures to overcome the 512 token length limitation in existing models.

Machine Learning/Software Engineer, Liquid Analytics (Startup) Summer 2021
Perform AI Application, Core Algorithms Team *(Remote, US)*
- Developed highly scalable algorithms in **Julia** to quickly process logistics data for large distribution companies.
- Set up queing infrastructure using **AMQP** and **RabbitMQ** to handle upto 300,000 requests each second.

Robotics Researcher, RVL Lab Sep. 2020 – Apr. 2021
Robot Vision and Learning Lab, University of Toronto *Toronto, ON*
- Improved autonomous driving performance in mobile robots via novel data augmentation techniques.
- Responsibilities: data collection, performing simulation experiments, designing/debugging the model architecture.
- Performed real robot experiments with a Husky robot; including sensor setup and **ROS** Node configuration.

Software Developer, EPSON Jul. 2018 – Apr. 2019
Machine Vision Team, Robotics Department, EPSON Canada *Markham, ON*
- Developed 3D object detection and pose estimation technologies for commercial bin picking robots.
- Automated evaluation tasks using **Python** and **Bash**, increasing (upto 5x) the amount of tasks run each day.

Projects

Model Based RL for Autonomous Driving | *Python, PyTorch, OpenAI Gym* Dec. 2021
Modelling Uncertainty in Neural Networks | *Python, PyTorch* Dec. 2021
Backwards Reachability Analysis Tutorial | *Matlab* Dec. 2020
Feature Visualization for ANNs (Workshop) | *Jupyter Notebook, Python, Tensorflow* Dec. 2019
NeoCirkuits (Android App) | *Java, Android Studio* Summer 2018

Education

Mila & University of Montréal (Currently Enrolled)
M.Sc, Computer Science (Robotics and Artificial Intelligence) *Sep. 2021 – Aug 2023*
- **Supervisor:** Prof. Liam Paull, director of the Montreal Robotics and Embodied AI Lab.

University of Toronto
H.B.Sc, Computer Science & Math ***CGPA:*** *3.63* *Sep. 2016 – May 2020*
- **Award:** Received the NSERC Undergraduate Student Research Award, a value of **$5600**. (2020)
- **Extracurricular:** Co-Founder & Head of Operations of the Robotics Club. (2019-2020)
- **Teaching Assistant:** Mobile Robotics (CSC477), Data Structures (CSC263), Theory of Computation (CSC236).

Technical Skills

Languages: Python, Julia, C/C++, Java, SQL
Developer Tools: Git, ROS, AWS, OpenAI Gym, Android Studio, CUDA, ssh, VNC
Libraries: PyTorch, Tensorflow, OpenCV, pandas, NumPy, scipy, Matplotlib, Plotly